

What is claimed:

- 1 1. Valve actuator for internal combustion engines, comprising at least one said
2 electromagnet (1061, 1081) and a magnetic plate (1141), whose movement controls the
3 displacement of the valve, characterized in that the parameters of the electromagnet and
4 of the plate are such that at least part of the magnetic circuit formed by the electromagnet
5 and the plate is in a state of magnetic saturation when the magnetic plate is in the
6 proximity of the electromagnet, the parameters being such that the magnetic circuit is in
7 the state of magnetic nonsaturation when it is located at a distance from the
8 electromagnet.
- 1 2. Actuator in accordance with claim 1, characterized in that the parameters
2 are such that at least part of the magnetic circuit is in the state of magnetic saturation for
3 an air gap between 0 mm and at most 1 mm.
- 1 3. Actuator in accordance with claim 1 or 2, characterized in that the
2 parameters of the electromagnet and of the plate comprise parameters related to the
3 shape and/or the dimensions and/or the nature of the material (or the materials) forming
4 the plate and the body of the electromagnet and/or the intensity of the current flowing
5 through the coil of the electromagnet.
- 1 4. Actuator in accordance with claim 3, characterized in that the thickness of
2 the plate is such that this plate is magnetically saturated in the proximity of the
3 electromagnet.
- 1 5. Actuator in accordance with claim 3, characterized in that the magnetic plate
2 has at least one said contracted part (144, 146) intended to be saturated when this plate
3 is located in the proximity of the electromagnet.
- 1 6. Actuator in accordance with one of the claims 3 through 5, characterized in
2 that the material forming the plate has a lower saturation threshold than the material
3 forming the electromagnet.
- 1 7. Actuator in accordance with one of the claims 1 through 6, characterized in

- 9 -

2 that it comprises a regulator controlling the current in the electromagnet.

1 8. Internal combustion engine comprising at least one valve in accordance with
2 any of the above claims.